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More about the PIPES which NEVER CORRODE

anti-corrosion.

COCHRANE & CO
LIMITED
ORMESBY IRON WORKS
MIDDLESBROUGH

SPECIFY
TALBOT
LININGS

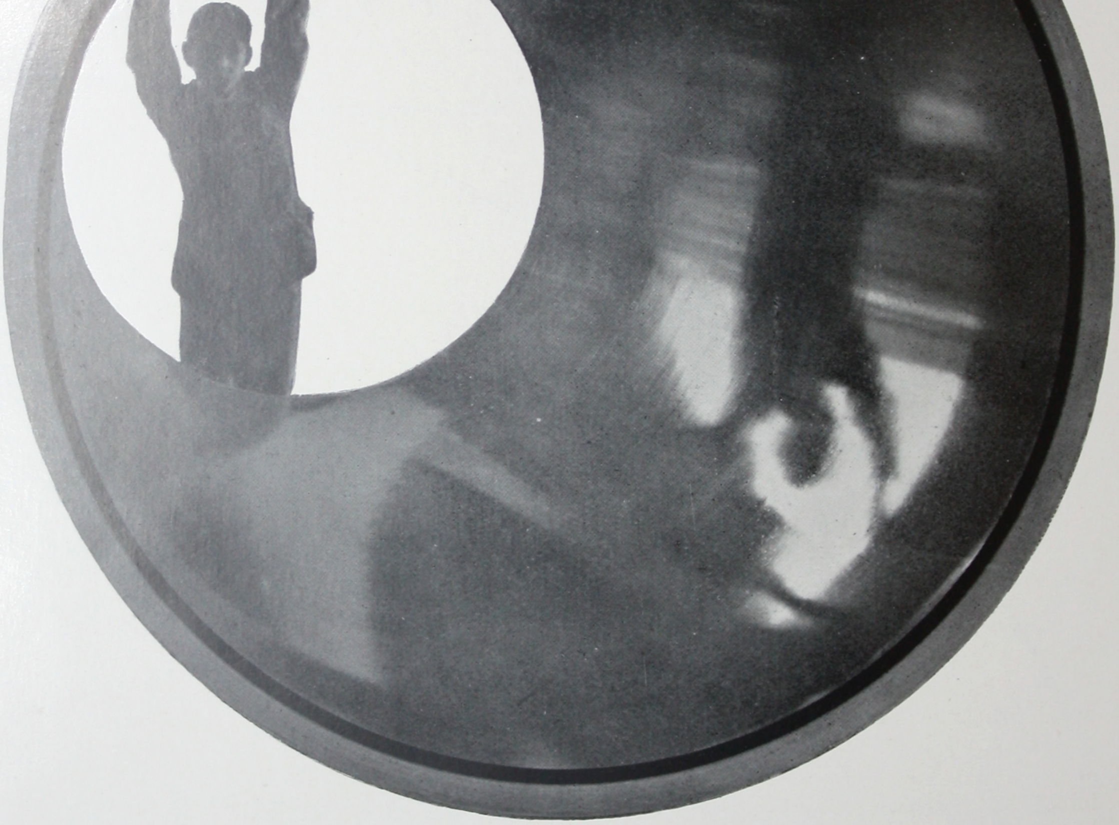
WATER MAINS

LINED CENTRIFUGALLY
AND COVERED BY THE

TALBOT PATENT PROCESS

COCHRANE & COMPANY, LTD.
ORMESBY IRON WORKS
MIDDLESBROUGH
ARE LICENCEES
UNDER
"TALBOT" PATENT No. 220,156, DATED 14/8/24.

COCHRANE
& Co Ltd
MIDDLESBROUGH



CAST IRON PIPE
WITH
TALBOT HYDRO-CARBON LINING.

(From unretouched photograph).

THE TALBOT HYDRO-CARBON PROCESS
PREVENTS CORROSION AND INCRUSTATION
OF
CAST IRON & STEEL PIPES.

Engineers all over the world are showing great interest in this development, and pipes thus protected have been specified by all the leading municipalities and Water Boards.

GENERAL DESCRIPTION.

BY means of this process iron and steel pipes can be supplied completely protected both internally and externally with a special bituminous composition of such a nature that the pipes are entirely preserved from corrosion. Bitumens are well known as being amongst the most beneficial materials in resisting such attack, but no satisfactory process has hitherto been evolved for giving a lining of suitable thickness and finish.

After several years of research work carried out at the Ormesby Iron Works at Middlesbrough, a method has been developed of treating certain bitumens so that when mixed with a suitable aggregate and applied to the pipe under centrifugal action, a tough elastic lining, having a **brilliantly smooth and mirror-like surface**, is obtained entirely protecting the metal from corrosion. Generally a lining and covering $\frac{1}{4}$ in. in thickness is recommended for ordinary purposes and has been proved entirely satisfactory.

DESCRIPTION OF PROCESS.

The bitumen, after having been specially treated, is intimately mixed when molten with the selected aggregate, which is a hard siliceous material practically inert to all chemical action.

The mixture, when ready, is introduced into the pipe by mechanical means, and distributed, by centrifugal action, evenly over the surface.

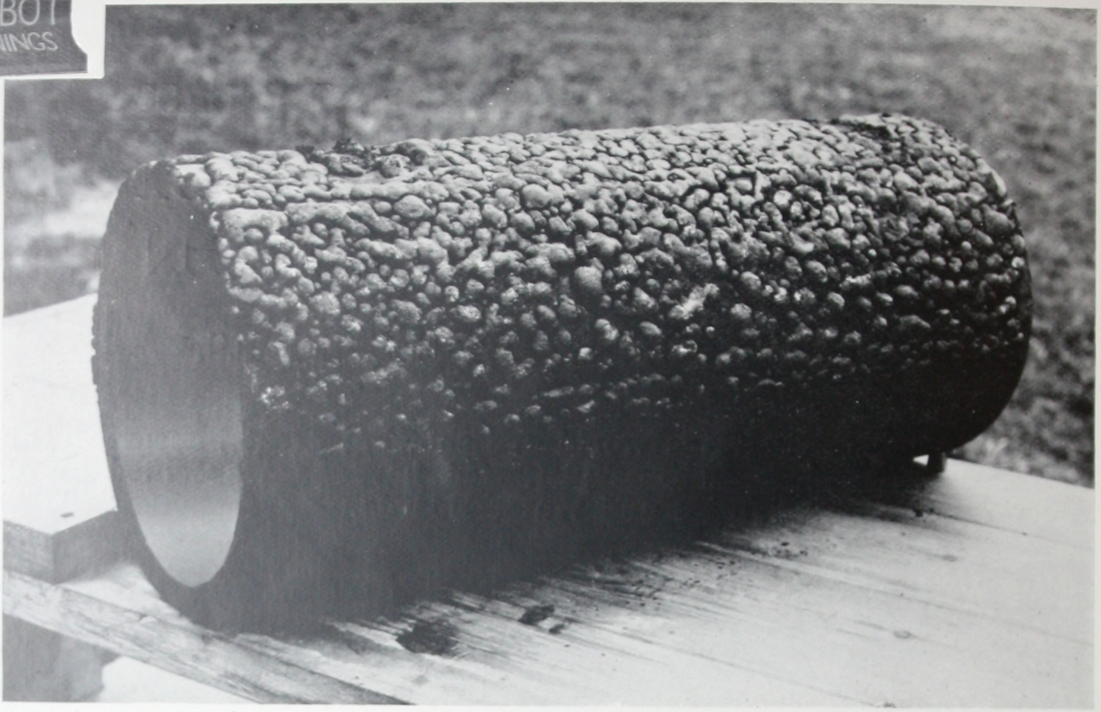
By this means, a densely packed lining is obtained, the surface of which is composed of a skin of practically pure hydrocarbon exuded from the body of the lining by the action of centrifugal force. The surface so obtained is of **a brilliantly smooth and mirror-like character** as can be seen from the photographs reproduced in this booklet, and will ensure great reduction in the friction to the flow in the pipe.

The chief advantages to be obtained by the use of this lining are:—

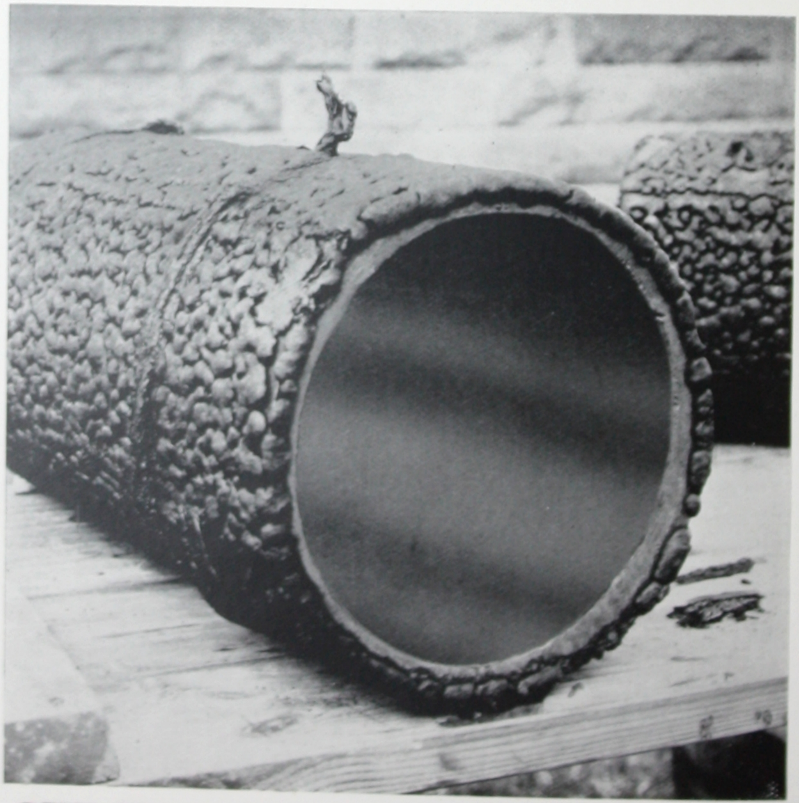
NO CORROSION.

The material is entirely impervious to water : it is unattacked by all the well known acids up to at least 33 per cent concentration, both saturated and dilute solutions of caustic alkalis, ammonia and brine.

It is also a non-conductor of electricity so that corrosion from all the ordinary known causes is completely overcome.



STEEL PIPE suspended and half submerged longitudinally for one year in a moorland aqueduct. The unprotected steel outside is heavily incrusted; the internal TALBOT LINING remaining perfectly smooth and glossy.



STEEL PIPE suspended and completely submerged longitudinally for one year in a moorland aqueduct. The unprotected steel outside is heavily incrusted; the internal TALBOT LINING remaining smooth and glossy. :: ::

NO INCRUSTATION—FULL BORE MAINTAINED.

The brilliantly smooth and highly glossy mirror-like surface obtained by this process gives no opportunity for the adhesions of growths and other deposits. Pipes have recently been examined after immersion for a year in one of the worst moorland waters noted for giving excessive incrustation in pipes. On removal it was found that whereas the external unprotected portion of the pipe was completely incrusted, the lined interior was as smooth and highly glossy as on the day of its immersion. Photographs of these Pipes are reproduced on pages 4 and 6.

REDUCED FRICTION IN MAIN.

The extraordinary smooth, highly glossy, mirror-like surface obtained reduces the friction to a minimum.

SMALLER PIPES ARE POSSIBLE.

In view of the prevention of incrustation and the reduction of friction, pipes of considerably smaller diameter can be used as there is no necessity for Engineers to make allowances for subsequent loss in the diameter of the pipe.

By maintaining the full carrying capacity smaller mains lined by the TALBOT Hydro-carbon process can be installed at less initial cost than unlined pipes of larger diameter for the same duties, and the cost of subsequently cleaning or scraping is entirely obviated.

WEIGHT OF THE LININGS.

The weight of these linings $\frac{1}{4}$ in. thick which is considered to be suitable for general work, is very little, as is seen from table given below :

The approx. weights of Linings and coatings for the sizes given below, are each as follows :

4 inches	×	12 feet	approximately	45 lbs.
6 inches	×	12 feet	"	68 lbs.
12 inches	×	12 feet	"	135 lbs.
24 inches	×	12 feet	"	270 lbs.
36 inches	×	12 feet	"	405 lbs.

The linings used are considerably less in thickness than those generally used in Concrete-lined pipes, a process which, up till now, has been employed by many Engineers in view of there being nothing better available. Therefore there is a considerable saving in transport charges.

OUTSIDE PROTECTION.

The covering of pipes with the same material protects them from external corrosion. This has been a source of trouble to Engineers, particularly in connection with Steel Pipes, the totally inadequate protection available up to the present time having made the use of Steel Mains impossible in many cases. By the " Talbot " process the installation of pipes either in iron or steel can be carried out with the certainty that the danger of corrosion has been overcome.

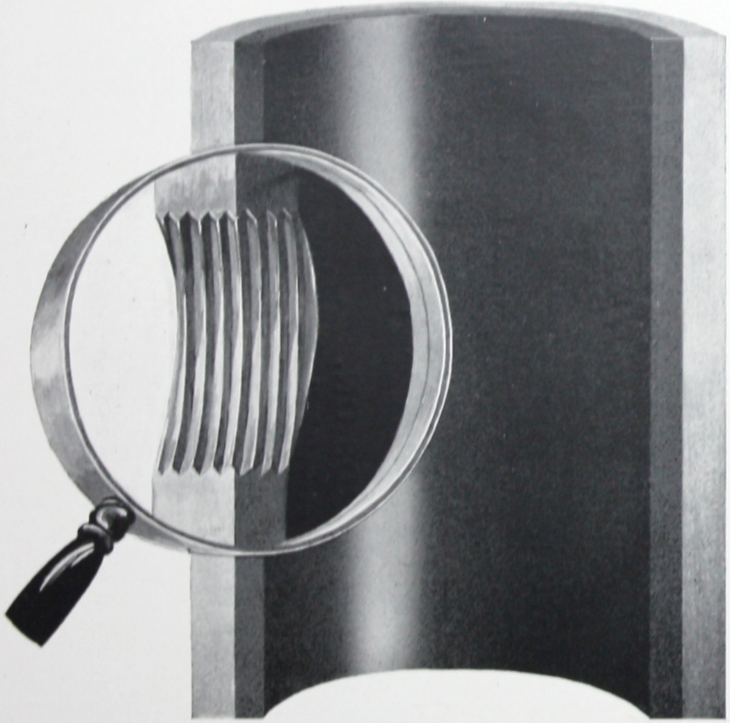
NO ELECTROLYTIC CORROSION.

By covering and lining the pipes with the " Talbot " composition, which is a non-conductor of electricity, the severe corrosion which frequently is set up by electrolysis, is entirely avoided.

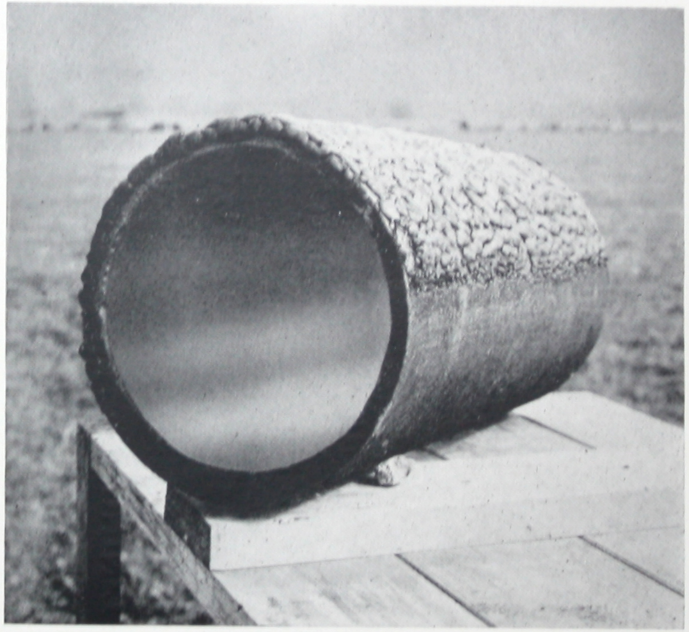
CLIMATIC CONDITIONS.

The standard lining and covering generally supplied has been prepared to withstand the climatic conditions experienced in temperate climates. Pipes lined with this material have been subjected to 27° F. of frost (i.e. 5° F. temp.) without damage, and have been maintained at a temperature of 140° F. without becoming soft or shewing signs of flow.

For tropical countries where higher temperatures are encountered, the composition can be modified to suit special conditions.



SECTION of CAST IRON PIPE *shewing tapped hole.* NOTE *the perfect thread on the lining.* : : : :



STEEL PIPE *suspended horizontally in the direction of flow and half submerged for one year in a moorland aqueduct. The unprotected steel outside is heavily incrusted; the internal* TALBOT LINING *remaining perfectly smooth and glossy.* : : : : : :

FIELD WORK.

No difficulty is encountered in field work or transport with pipes protected with this material. The material itself is elastic and flexible, adheres excellently to the pipe surface and will withstand all reasonable handling without damage.

CONTINUOUS LINING OF PIPE LINE.

In order absolutely to safeguard a pipe line from corrosion it is necessary to protect completely all points of the line from any possible attack. With the "Talbot" process, it is possible to fill in the intervening space between the linings with the same material.

In the case of large diameter mains this is done easily by ramming the material, warmed sufficiently to be in a plastic condition, into the space inside the main. A hot iron or a blow lamp is then played on the surface of the joint so as to weld the two linings together into one continuous lining. The material will not fracture at the joints if the pipes subsequently settle in their bed.

For small diameter pipes a convenient way is to apply a ring either of bitumen or of lining material softened with paraffin and warmed sufficiently to be plastic into the socket of the pipe, and pushing the next pipe into position. The plastic material is exuded into the pipe and the excess can be readily removed when set by a rod.

OUTSIDE JOINTING.

The usual method of running and caulking the outside joint with molten lead can be employed without any risk of damage to the Hydro-carbon lining by the heat of the lead.

SERVICE MAINS.

Pipes lined with the "Talbot" lining can be drilled and tapped for making the necessary house connections without difficulty or fracture, a perfect thread being obtained on the lining as well as on the pipe itself, as can be seen in the photograph on page 6. This is a great advantage over similar pipes lined with Concrete where considerable expense has been incurred by the damage done to the taps and drills by the concrete lining.

CHEMICAL WORKS.

Pipes protected with this material are admirably suited for the conveyance of many corrosive liquors, met with in chemical works and wet metallurgical processes. The heavy expenditure caused by the corrosive action of such liquors can be saved by using Talbot lined pipes.

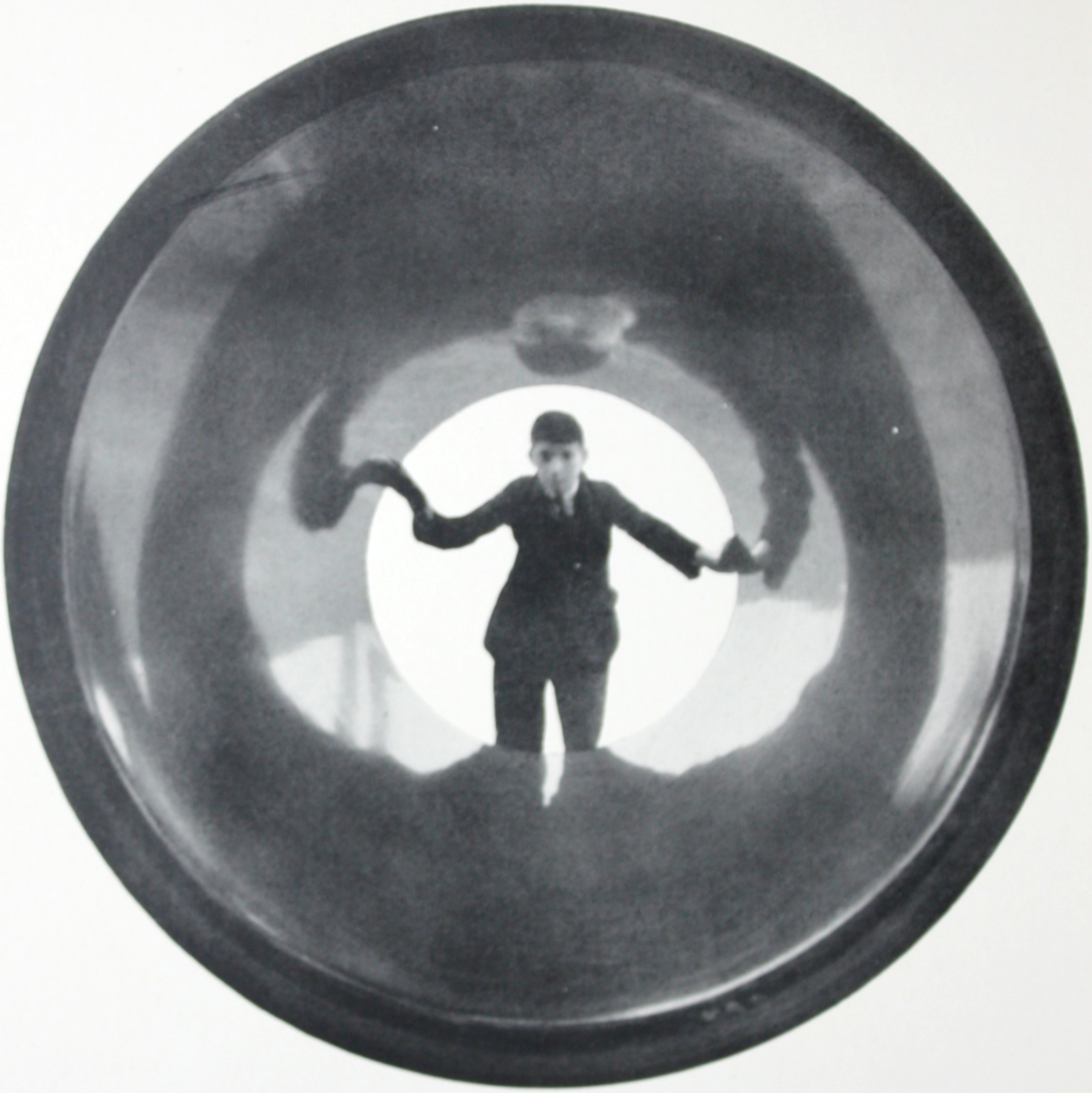
NO MATURING NECESSARY.

No delay is therefore necessary for maturing as in the case of Concrete Linings. The pipes after lining are ready for immediate shipment.

COST.

The additional cost of lining by this process varies with the diameter of the pipes required. On the average it does not exceed 15 per cent of the cost of Cast Iron or Steel pipes, thus comparing most favourably with Concrete Linings.

These tremendous advantages very substantially reduce the initial cost of schemes and entirely discount the cost of the protection by the "Talbot" process many times over.



MILD STEEL TUBE
WITH
TALBOT HYDRO-CARBON LINING.

(From unretouched photograph)

TREMENDOUS FINANCIAL SAVINGS

1. The life of the Main is indefinitely increased.
2. The present annual cost of redemption can be at least halved.
3. The elimination of corrosion, incrustation and frictional losses assures maximum efficiency.
4. Smaller and lighter pipes can be installed.
5. There is no necessity for the periodical cleaning and scraping of the mains as in the case of unlined pipes.

THE COST OF PIPE LINES IS ENORMOUSLY REDUCED

BY THE

Talbot Hydro-Carbon Process

HOODS
BANBRIDGE